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ABSTRACT

The effect of an intrusive advisement program implemented at the University of Texas at Arlington to reduce first-term freshmen attrition was studied. A randomly selected sample of 1,100 entering fall 1980 freshmen (51 percent) was assessed in terms of student characteristics, based on questionnaire responses. The questionnaire also determined student needs, and information packages including specific referrals to the appropriate on-campus service were assembled individually for students of the experimental group. Four-hundred-and-five such referrals were made with some individual students receiving as many as three referrals. The information packages were mailed to the experimental group during the first week of October. The second treatment phase involved monitoring the mid-term grade reports. Students whose reports reflected a problem in one or more courses were mailed a letter advising them of the various resources on campus that assist students with their academic development. A third letter mailed to experimental group members just before final exams acknowledged the exams and expressed support for successful completion of the semester, and noted important deadlines and services available. Almost identical mean attrition rates for both the experimental and control groups were found. Of the 86 freshmen students who withdrew, 50 had a grade point average of less than 1.94. It is suggested that the intervention failed to identify those students with serious academic problems early enough to provide assistance and positive reinforcement. A followup comparison of self-identified needs of the experimental and control groups is also planned for the end of the spring semester. Vincent Tinto's theoretical student retention model and methodologies are also assessed. (SW)

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The Effect of an Intrusive Advisement Program on First-term Freshmen Attrition

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THE ASSOCIATION FOR INSTITUTIONAL RESEARCH

This paper was presented at the Twenty-First Annual Forum of the Association for Institutional Research held at the Leamington Hotel in Minneapolis, Minnesota, May 17-20, 1981. This paper was reviewed by the AIR Forum Publications Committee and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC Collection of Forum Papers.

Mary Corcoran
University of Minnesota
(Editor, AIR Forum Publications)

ABSTRACT

This paper reports the results of one university's efforts to reduce attrition. Those in a sample of incoming freshmen were randomly assigned to either a treatment or control group (N=1,100). A questionnaire was administered to both groups to discover their needs and to collect additional information which was not already available. On the basis of the questionnaire results, the control group received information and intrusive assistance in response to their needs. For comparison purposes, a second questionnaire was administered near the end of the academic year. The presenter will discuss the impact that the intrusive approach had on the attrition rate and the implications it has for Vincent Tinto's theoretical student retention model and retention methodologies.

INTRODUCTION

A considerable amount of the research on attrition has been ex post facto rather than experimental. As noted by Lenning, Beal, and Sauer (1980), this has been unavoidable because (1) the criterion (independent) variable, college experience, cannot be manipulated in any experimental sense, and (2) the students (subjects) cannot be randomly assigned (p. 92).

Admittedly, college experience is not conducive to manipulation as an experimental variable. However, certain aspects of this experience lend themselves to quasi-experimentation. Past research has identified a number of variables associated with dropout behavior; most notably, first semester grade point average, poor study habits, student concern about finances, and the quality of student-faculty relationships. Evaluation research of programs designed to manipulate and measure the effects of theoretically based criterion variables provides an excellent opportunity to utilize the more rigorous quasi-experimental designs of the sort described by Campbell and Stanley (1963) and Campbell and Cook (1979). A common deficiency found in most studies of dropout behavior has been the failure to incorporate elements of quasi-experimental design which can enhance reliability and validity. "Autopsy" and cross-sectional designs suffer from serious methodological shortcomings. Terenzini favors local studies utilizing more rigorous research design properties which have greater potential for valid interpretation and for wider administrative and planning utility. Lenning et al. (1980) further assert that few studies possess the construct validity of research that is based on some theory or aimed at testing an hypothesis.

This research effort is an attempt to address these methodological shortcomings and to satisfy the threefold purpose of (1) testing the construct validity of the Tinto (1975) model of attrition; (2) identifying possible determinates of attrition/retention; (3) determining the impact of an intrusive advisement program on one university's retention rate. The Tinto model was chosen as the best theoretical base for the research. As Terenzini and Pascarella (1980) have stated, "The Tinto model views attrition as a longitudinal process involving a complex series of sociopsychological interactions between the student and the institutional environment (p. 272)." The model emphasizes the interaction between the individual student and the various normative and structural aspects of the institution, leading to varying degrees of integration into the academic and social systems of the institution. Central to Tinto's model are the interactions between the student, faculty and administrative personnel in the formal academic and informal social settings. Both the frequency and the quality of these interactions are presumably crucial to modifying the students' college completion goals and commitments to the particular institution.

Most research has focused, and continues to focus, on student factors--as have college personnel concerned with retention and attrition. Too little research and administrative attention has been devoted to the complex pattern of interactions between student factors and institutional factors and the the testing of programs designed to impact the problem of attrition. This study focuses on these interactions at both the theoretical and programmatic levels.

THE "SUICIDE" THEORY OF DROPOUT FROM HIGHER EDUCATION

Durkheim's theory of suicide was first applied to dropout from higher education by Spady (1920). Tinto (1975) further developed the application of this theory in order to move towards "a predictive rather than descriptive theory of dropout behavior (p. 91)." The idea of dropout as suicide refers to the malintegration of the individual into the social system of the college. As stated by Tinto:

> One can reasonably expect, then, that social conditions affecting dropout from the social system of the college would resemble those resulting in suicide in the wider society; namely, insufficient interactions with others in the college and insufficient congruency with the prevailing value patterns of the college collectivity (pp. 91-92).

As discussed previously, interactions in the formal academic and the informal social system are central to the Tinto model. Social integration occurs primarily through informal peer group associations, semi-formal extra-curricular activities, and interactions with faculty and administrative personnel within the college. The quality of these interactions are a form of social rewards that impact the students' educational goals and institutional commitments. Successful integration into the social system presumably will lead to a more positive evaluation of the costs of attending college, reinforcing the individual's educational and institutional commitments.

There is a vast quantity of literature pertaining to the influence of peer-group relationships on the college experience. The literature generally supports the premise that close peer-relations are associated with persistence. The quality of these relationships as well as the values endorsed by the peer-group

have shown to be of particular importance.[1]

The literature is less than conclusive about the relationship between extra-curricular activities and dropout behavior. Pantages and Creedon (1978) conclude that extra-curricular activities are not a primary factor in attrition or persistence. Many studies, however, support the role of such activities in retaining students.[2]

Faculty-student interaction has consistently been shown to be directly associated to dropout behavior. Terenzini and Pascarella, in a series of studies at Syracuse University, demonstrated the relationship between frequent, positive student-faculty contact and persistence.[3] According to Cope (1978), social interaction between faculty and students is related to persistence especially if the interaction focuses upon intellectual or course-related matters. Pantages and Creedon (1978) concurred that, "The quality of the relationship between a student and his or her professors is of crucial importance in determining satisfaction with an institution (p. 79)."

Tinto (1975) recognized the importance of administrative personnel in the social integration of the student. He did not, however, elaborate the role these relationships play, nor does he cite any studies that focus on these interactions. Many researchers, including Noel (1976) assert the importance of a "significant adult" on campus.

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[1]See Tinto (1975) and Pantages and Creedon (1978) for a more comprehensive treatment of topic.

[2]See Pantages and Creedon (1978) for a more comprehensive treatment of this topic.

[3]Terenzini, Patrick T., and Pascarella, Ernest, "Toward the Validation of Tinto's Model of College Student Attrition: A Review of Recent Studies," Research in Higher Education Vol. 12 No. 3, 1980.

Noel (1978) further asserts the integral role that support staff can play in the creation of a "staying" environment. Pantages and Creedon reasoned that "humanizing the interactions between students and college staff would benefit both the institution and the student." They stressed that active, concerned involvement with the student on the part of the administrators could positively impact the students' evaluation of the institution and encourage reenrollment by students who "stopout."

An "intrusive advisement" program was implemented based on the concept of providing an administrative staff person in the role of an active information, referral and advisement agent to a group of randomly assigned first-time freshmen students. The task involved analyzing these students' self-reported needs, supplying them with information about and referring them to services on-campus designed to satisfy these needs. One of the key elements of the treatment was an attempt to instill in the experimental group a feeling of identity with a "significant adult" other on campus. The staff person undertook the role of an "outreach" worker, disseminating information about programs and services and actively intervening with students to assist them in successfully negotiating their first semester college experience. The treatment depended upon the voluntary cooperation of the students in the experimental group, leaving it to their individual initiative to act upon the information and referrals that were provided to them.

The study experimentally tested the hypothesis that students receiving the "intrusive advisement" treatment would be retained at a greater rate than those from whom the treatment was witheld. It

further hypothesized that the students in the experimental group would exhibit lower levels of posttest needs as compared to the control group. The study also involved the collection of a large set of data for the purpose of testing the construct validity of the Tinto model of attrition.

METHODOLOGY

Fifty-one percent of the entering fall 1980 freshmen (N=1,100) were selected at random by computer for inclusion in the study. Random assignment into experimental and control groups occurred after stratifying the sample according to total SAT score to ensure equivalent distributions of scores in the experimental and control groups. The study utilized a pretest-posttest control group design with equivalent groups in order to control as much as possible the effects of extraneous variables that can jeopardize internal validity. The threat involved is that extraneous variables (e.g., exposure to orientation, differential levels of financial aid awards, etc.) offer plausible hypotheses explaining a pretest-posttest difference, rival to the hypothesis that the treatment variable caused the difference.

Sample members of both groups were mailed a detailed questionnaire during the first week of classes. The instrument was designed to provide information on a number of selected attributes of the student, including: background characteristics; high school experiences; socioeconomic status of the parents; college and career expectations and commitments; parental encouragement and aspirational climates, motivational factors; financial factors; expected academic progress; and an inventory designed to assess the perceived needs of

entering freshmen. Usable responses were obtained from fifty-seven percent of the sample (N=625). Forty-eight percent of the usable responses (N=300) were obtained from the experimental group and fifty-two percent (N=325) were obtained from the control group. Statistical tests showed the the 625 respondents were representative of the University of Texas entering freshmen class of 1980 with respect to sex, race, college of enrollment and SAT scores.

TREATMENT

After all usable responses had been collected, the need inventory section of the questionnaire was analyzed by this researcher, who served as the administrative contact person for the experimental group throughout the semester. Based on responses from the need inventory section of the pretest questionnaire, information packages including specific referrals to the appropriate on-campus service were assembled. These packages individually addressed the reported needs of each student in the experimental group and included personalized referral forms that directed the student to a specific service, provided the name of a contact person within the service and specified the nature of the need to be addressed. Four hundred and five such referrals were made with some individual students receiving as many as three referrals. The packages also contained detailed information about all services available to students on-campus in the form of information brochures and biographies taken from a student handbook. The information packages were mailed to the experimental group during the first week of October.

The second phase of the treatment involved monitoring the mid-term grade reports. The grade reports for each student in the

experimental group were evaluated in order to pinpoint those students with academic problems. The students whose reports reflected a problem in one or more of their courses were mailed a letter advising them of the various resources on-campus that assist students with their academic development. These resources included specialized tutoring and counseling services offered through Project SOAR (a free tutoring and counseling program that provides individual attention to specific academic problems) and through the Counseling, Testing and Career Placement Office, which offers a variety of academic skills improvement services (e.g., individual and group counseling relating to time management, reading, note-taking, study habits and test-taking strategies). Those students whose academic performance at mid-semester was rated as satisfactory were sent a letter of encouragement for their good work. These letters were mailed to the experimental group during the first week of November, following the report of mid-term grades.

A third letter was mailed to each of the students in the experimental group the first week of December prior to final exams. The letter acknowledged the pending exams and expressed support and encouragement for a successful completion of the semester. The letter further advised the students of important deadlines as well as services available to assist the student in planning for their next semester at the University.

VARIABLES AND MEASURES

Two measures were developed to test for the success of the intrusive advisement program, the first being a straightforward measure of the difference in first-term attrition rates between the

groups. Attrition was operationalized as a failure to complete the fall academic term and included only voluntary withdrawers. This definition will later be expanded to encompass the whole freshman year for the purpose of testing the Tinto model variables for determinates of freshman attrition. Lenning, et al. (1980) consider term completion rates as a valid measure of attrition on the micro level as part of the classification structure they developed. This definition was particularly useful for purposes of evaluating the treatment program. A one-way analysis of variance was used to test for significant differences in attrition between the two groups.

The second measure to be utilized to test for the success of tne treatment program will be a posttest comparison of the changes in need levels displayed by the two groups. These data are still in the collection stage at the time of this writing. Variations in need levels will be measured by a five-item cumulative index developed from the inventory of self-reported needs. The inventory consisted of twenty-eight items covering specific areas of possible needs. Respondents to the pretest were asked to fill in a number corresponding to their perceived level of need for each item: 1=No need; 2=Moderate need (Assistanc would be helpful, but could get along without it); 3=Strong need (I have a definite need in this area). Based on the pretest results, five categories of general need levels emerged:

Social (e.g., being informed about campus events, finding places to associate informally with others, participating in sporting or recreational activities, etc.); coefficient Alpha=.80

Special (e.g., health services, psychological counseling, handicap services, veterans' assistance, etc.); Alpha=.75

Essential (food services, legal advice, financial aid, housing services, etc.); Alpha=.74

Academic (obtaining a tutor, developing better study habits, improving specific academic skills, etc.); Alpha=.85

Counseling (choosing a major, degree planning, vocational or career counseling, etc.); Alpha=.72

These categories were derived from partial correlation analysis and were tested for reliability through the use of the SPSS subprogram "Reliability." The need inventory was replicated on the posttest, and differences in need levels along the five categories will be measured using analysis of variance to test the hypothesis that those students receiving the treatment variable would display lower levels of need than those students from whom the treatment was witheld.

A number of variables were used in this study to measure the background characteristics and individual attributes that the students brought with them to the institution which presumably influence the development of educational expectations and commitments. According to the Tinto model, these expectations and commitments are both important predictors of and reflections a student's college experience. The variables utilized fell into six general categories, measuring various aspects of the Tinto model.

The six categories of pretest data and their component variables are as follows:

Prematriculation Characteristics
- Age
- Sex
- Ethnicity
- Combined Scholastic Aptitude Test (SAT) scores
- Size of high school graduating class
- Type of academic program in high school (e.g., college preparatory, vocational)
- High school grade point average
- Size and type of community (e.g., small town under 10,000 pop., large city over 500,000 pop., etc.)
- Distance in miles from permanent home

Father's educational attainment
Mother's educational attainment
Parents' combined income

General College Environment Characteristics
Attendance at Freshman orientation
Attendance in Education 1131 (a special college adjustment course offered to first-time freshmen)
Current residence (e.g., college dormitory, off-campus apartment, etc.)
Full or part-time status
Number of academic hours attempted

Parental Expectations and Encouragement
Frequency of parental praise
Frequency of discussions with parents concerning academic and career goals
Level of academic performance expected by parents
Level of educational attainment expected by parents

Student's Educational and Institutional Commitments
Number of universities applied to and number of acceptances received
Priority of choice among acceptances
Reasons for attending this university
Highest level of education planned at this university and overall
Commitment to the goal of college completion

Student Educational and Institutional Expectations
Goal in attending college
Expected emphasis of this campus (e.g., job preparation, social development, intellectual development, etc.)
Expected area of personal satisfaction (e.g., grade performance, progress toward a career goal, peer-group interaction, etc.)
Level of expected academic performance

Financial Resource Characteristics
Amount in dollars of financial contributions from eleven various sources including:
Parents or family
Grants or scholarships
Guaranteed loans
College work-study
Other part-time work
Full-time employment
Savings from summer employment
Other savings
Spouse
G.I. benefits
Social Security benefits

For the most part, the data were drawn from the pretest survey instrument. Additional background data were collected

unobtrusively from student records. Posttest data, focusing on social and academic integration factors, are still in the collection stage. The posttest results will be combined with the pretest data to provide a comprehensive test of the construct validity of the theoretical model.

ANALYSIS

A one-way analysis of variance was performed between the criterion variable (enrolled--dummy coded; 0=enrolled second term, 1=not enrolled second term) and the categorical variable of group assignment (experimental, control). The one-way analysis of variance compares mean scores along the criterion variable to test for significant differences between categories of the independent variable. If significant differences are found using the F distribution, then with a known probability of a Type I error it can be concluded that the differences in mean rates of retention are due to the treatment variable. The statistical test Eta was applied to determine the strength of the association.

The main treatment of the data was an analysis of covariance. The variables--first-semester grade point average, number of academic hours attempted, combined SAT score and commitment to the goal of college completion--were added to the one-way analysis of variance after testing out to be significantly associated to attrition in a separate series of one-way analyses of variance.

Most commonly, metric covariates are inserted into the analysis to remove extraneous variation from the dependent variable. However, given the strength of the associations of the covariates, as measured by Eta, the covariate and factor effects were of equal interest.

A hierarchal stepdown analysis was utilized. The procedure entered the covariates into the analysis after the factor main effects holding constant each preceding variable entered. This procedure corrects for all factors and covariates and interactions in decomposing the explained variation.[4]

RESULTS

At the beginning of the Spring 1981 academic term, 13.8% of the students in the sample (n=86) had voluntarily withdrawn from the university. 47.7% from the experimental group (n=41) and 52.3% from the control group (n=45) had not been retained. Table One shows the results of the one-way analysis of variance applied to these findings.

TABLE 1

One-way Analysis of Variance for Effects of the Treatment Variable on First-term Attrition Rates

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Square	F Ratio
Between Groups	1	0.0005	0.0005	0.004
Within Groups	623	74.1631	0.1190	
Total	624	74.1637		

[4]For an elaboration of this statistical procedure see Norman H. Nie, C. Hadlai Hull, Jean G. Jenkins, Karen Steinbrenner and Dale H. Bent, SPSS: Statistical Package for the Social Sciences (New York: McGraw Hill Book Co., 1975) pp. 259-261.

In order to reject the null hypothesis we would expect an F-ratio greater than 3.84 at the 95% confidence level for 1 and 623 degrees of freedom. Clearly, the effects of the treatment variable did not produce a significant effect. Table Two reproduces the mean attrition scores across both categories of the independent variable. It shows almost identical mean attrition rates for both groups, signifying, in effect, that subgroups are independent random samples drawn from the same population, and that any observed differences are the random effect of sampling error.

TABLE 2

Mean Attrition Scores for the Experimental and Control Groups[1]

Group	n	Mean	Standard Deviation	Standard Error
Experimental	300	0.1367	0.3441	0.0199
Control	325	0.1385	0.3459	0.0192

[1]Total population mean = 1.23, Eta^2 = 0.000

Since the treatment variable offered little in terms of explaining variation in the attrition rate, the covariates first-semester grade point average, academic hours attempted, combined SAT score, and commitment to goal of college completion (five-item ordinal scale) were added to the analysis. Table Three (on the following page) reports the results of the analysis of covariance.

TABLE 3

Analysis of Covariance for First-term Attrition Rate[1]

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Main Effects (Treatment Variable)	0.002	1	0.002	0.03
Covariates	12.197	4	3.049	32.42**
First Semester Grade Point Average	7.389	1	7.389	76.14**
Number of Academic Hours Attempted	3.199	1	3.199	32.96**
Combined SAT Score	1.098	1	1.098	11.31**
Commitment to the Goal of College Completion	0.511	1	0.511	5.26*
Explained	12.199	5	2.440	25.14**
Residual	58.810	606		
Total	70.010	611		

[1] 13 cases (2.1%) missing
*significant at the .05 level
**significant at the .01 level

The table reflects the significant contribution of the set of covariates in explaining variation in first-term attrition rates. R^2 for the combined effect of the covariates after subtracting the main effect (treatment) variable variation equals 0.172. Consequently, the covariates explain 17.2% of the variation in attrition rate.

Partial beta coefficients for all the covariates are reported in Table Four (next page). The partial betas represent the effect of each independent variable with all other independent effects controlled.

TABLE 4

Partial Beta Coefficients for First Semester G.P.A., Number of Academic Hours Attempted, Combined SAT Score and Commitment to the Goal of College Completion

Variable	Normalized Regression Coefficient
First Semester G.P.A.	-0.122
Commitment to Goal of College Completion	-0.036
Number of Academic Hours Attempted	-0.025
Combined SAT Score	0.000

Table Four reflects the predominant effect of first semester grade point average in predicting first-term attrition.

CONCLUSIONS

This study reported the partial results of the test of an intrusive advisement program on the attrition rate at one university. In terms of the effect of the program on first-term attrition, it would have to be concluded that the program failed to impact this phenomenon. This result is attributable to a combination of factors.

First, the analyses reported here strongly indicate the importance of first semester grade point average. This is not a particularly surprising finding, but it is important to note that, of the 86 freshman students who withdrew, 50--or 58.1%--had a grade point average of less than 1.94. 46% (n=23) of these students were in the experimental group, and 54% (n=27) were in the control

group. The treatment program that was designed fell short in identifying those students with serious academic problems early enough to intervene with the appropriate academic assistance as well as positive reinforcement to attempt to overcome the early identification with failure. In order to accomplish this kind of intervention, the treatment program would necessarily have to be expanded to include more staff to monitor and advise these students. The ratio of one staff advisor to 300 students was not sensitive enough to respond quickly or effectively to serious academic problems.

The second test of the program, the comparison in need levels between the experimental and control groups, will be completed at the end of the spring semester. As a measure of success, it is expected that the treatment program will positively impact the self-identified needs of the students in the experimental group. If this is in fact the outcome, it was hypothesized that the students would have more frequent interactions with support staff on-campus and would thereby feel more of an identity with the institution. Consequently, these students should be retained at a higher rate. The causal chain involved with this hypothesis is much less direct than the gross measure of first-term attrition; however, it is a more appropriate measure of the success of the treatment program. The combination of measures from both the pretest and posttest data will provide a much more complete basis on which to judge the success or failure of the treatment program.

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